

Gap fraction

Gap fraction vs Δy (LJ) ($240 < p_T < 270$)

- ATLAS
- Herwig++ 2.7.1 default
- Herwig 7.2.0 default
- ▲- Pythia 8.176 default

2

1.5

1

0.5

0

ATLAS_2011_S9126244

Rivet 3.1.0, $\geq 100k$ events

mcplots.cern.ch [arXiv:1306.3436]

Ratio to ATLAS

2

1

0.5

2

0.5

0

2

4

6

$|\Delta y|$

The figure displays two panels comparing ATLAS experimental data with Monte Carlo models for gap fractions in 7000 GeV pp collisions. The top panel shows the gap fraction as a function of the absolute rapidity difference $|\Delta y|$ (ranging from 0 to 6). The bottom panel shows the ratio of the gap fraction to the ATLAS data, with shaded regions representing uncertainty bands for the Herwig++ (yellow) and Herwig 7.2.0 (green) models. The Pythia 8.176 model (blue triangles) is also shown for comparison. The ATLAS data points (black squares) show a decreasing trend in gap fraction as $|\Delta y|$ increases, starting near 1.0 at $|\Delta y| \approx 0.5$ and reaching approximately 0.4 at $|\Delta y| \approx 4.8$. The Herwig++ model (orange circles) generally overpredicts the gap fraction at larger $|\Delta y|$, while the Herwig 7.2.0 model (green squares) underpredicts it. The Pythia 8.176 model (blue triangles) provides a better fit to the ATLAS data at larger $|\Delta y|$.

$ \Delta y $	ATLAS (Gap Fraction)	Herwig++ 2.7.1 (Gap Fraction)	Herwig 7.2.0 (Gap Fraction)	Pythia 8.176 (Gap Fraction)
0.5	0.95	0.95	0.95	0.95
1.0	0.80	0.80	0.80	0.80
1.5	0.65	0.65	0.65	0.65
2.0	0.55	0.60	0.55	0.50
2.5	0.45	0.50	0.45	0.45
3.0	0.35	0.45	0.35	0.35
3.5	0.30	0.35	0.30	0.35
4.0	0.30	0.25	0.25	0.30
4.5	0.35	0.15	0.15	0.40
4.8	0.35	-	-	0.40